

The claims remaining in the application are 1-4, 6-7, 17-20, 29-39, 45-56, and 61-64.

#### REMARKS

The Applicants would like to thank the Examiner for the quick and courteous final Office Action.

The Applicants greatly appreciate the Examiner's allowance of method claims 33-39, 45-56 and 61-64.

#### 35 U.S.C. §102/§103 Rejection over WO 98/16586

The Examiner has rejected claims 1-7 under 35 U.S.C. §102(b) as allegedly anticipated by, or in the alternative, under 35 U.S.C. §103(a) as allegedly obvious over WO 98/16586.

The Examiner maintains the rejection for the reason of record and had the following response.

The Examiner finds that claim 1 recites that the shell acts as an anti-agglomeration agent (without particular [*sic*, particulate] materials), and claim 5 recites that a coating of an anti-agglomeration agent is applied during and/or after the encapsulated compound is ground (without particular [*sic*, particulate] materials). Thus, the Examiner asserts that the shell and said coating can be the same material in the claimed final product.

The Examiner admits that WO 98/16586 teaches a different process, but states that an invention in a product-by-process is a product, not a process, citing *In re Brown* and *In re Thorpe*. Thus, the Examiner alleges it is an anticipation as well as obviousness since a different process is recited. However, the Examiner contends that usually no statement regarding said obviousness is needed in this type of rejection since the reason under the inherency (which is an anticipation) is used, and a burden is on the applicant to show that his product (obtained from the process) is different from that of the prior art.

The Examiner finds that WO 98/16586 teaches a stable, nonagglomerating powder in abstract and thus the wax of WO 98/16586 inherently acts as an anti-agglomeration agent. The Examiner notes that the Applicants state that the core and shell are reactively linked. But Applicants also state that said reactive linking does not necessarily mean a

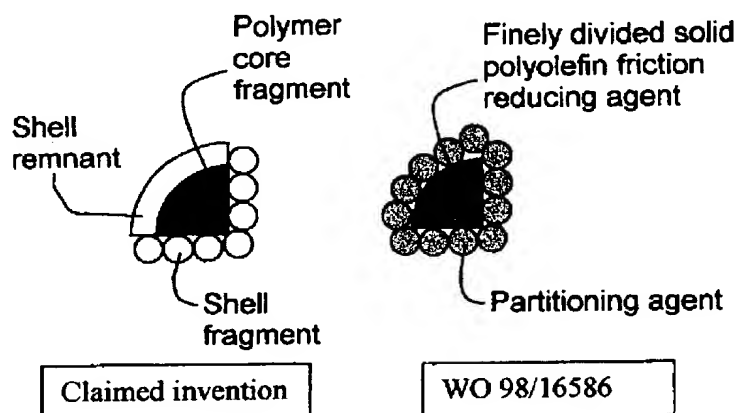
covalent bond between the core and shell, but rather any adhesive force such as static force or hydrogen bonding. The Examiner alleges that the wax and any polymer of WO 98/16586 inherently possess such adhesive force.

The Applicants must respectfully traverse.

The Applicants further respectfully direct the Examiner's attention to the fact that dependent claim 5 has been cancelled herein.

The Applicants would again respectfully remind the Examiner that a patent claim is anticipated, and therefore invalid, only when a single prior art reference discloses each and every limitation of the claim. *Glaxo Inc. v. Novopharm Ltd.*, 52 F.3d 1043, 1047, 34 U.S.P.Q.2d 1565 (Fed. Cir.), cert. denied, 116 S.Ct. 516 (1995). As will be further explained, it is respectfully submitted that the reference does not disclose each and every limitation of the claims as amended herein. Further, to support an obviousness rejection, the Examiner has the initial burden of establishing a *prima facie* case of obviousness of the pending claims over the cited prior art, *In re Oeticker*, 977 F.2d 1443, 1445; 24 U.S.P.Q.2d 1443 (Fed. Cir. 1992). As will be further explained, it is respectfully submitted that the Examiner has not established a *prima facie* case of obviousness of the pending claims as amended herein.

The Examiner is respectfully reminded that claim 1 herein now recites "where the shell acts as an anti-agglomeration agent". As the Examiner notes, WO 98/16586 simply grinds a high molecular weight hydrocarbon-soluble polymer *in the presence of* waxes. This gives a different structure and compositional result from that claimed herein. When the shells encapsulating the cores of the instant claims are ground, some portions of the shell fragments naturally and continue to adhere to the core fragments. This residual physical adhesion enhances the anti-agglomeration effect of the shell because at that interface, that side of the core fragment is more physically protected from adhesion and agglomeration as contrasted with the sheared surfaces to which ground, loose shell fragments adhere relatively more loosely. The Examiner's attention is respectfully directed to the sketch below, which shows schematic representations of the cross-section of the resulting particulate compounds from the invention as recited in claim 1 (left), compared with the corresponding particle of WO 98/16586 (right).



On the left side of the sketch, in the cross-section of the inventive polymer core fragment, the core fragment still has a shell remnant adhered thereon. Shell fragments are shown surrounding the remainder, exposed surfaces of the DRA polymer fragment. In the WO 98/16586 cross-section on the right, the finely divided polyolefin friction reducing agents are ground in the presence of a fatty acid wax partitioning agent surrounding all of its surface.

The Applicants stipulate that the fatty acid wax partitioning agent of WO 98/16586 would adhere to the finely divided polyolefin friction reducing agents therein, but the method therein will *not* give an intimate or still-adhered shell remnants conformally covering a polymer core fragment such as shown on the left with the shell remnant. The shell material, which encapsulates the core, is originally continuous and all encompassing and conformal with respect to the polymer core. Upon grinding, much of the shell will be broken off into fragments, which then acts as an anti-agglomerating agent, but some remnants will remain adhered onto the polymer core fragments. This coverage is much more complete, conformal and intimate than the relatively more porous shell fragments on the sheared surfaces of the polymer core fragment and the relatively more porous partitioning agent on the sheared surfaces of the finely divided polyolefin friction reducing agents. These other coatings are more porous because of the spaces or interstices between the shell fragments or partitioning agents.

Any shell fragments and partitioning agents added would be able to provide only a relatively porous surface coverage, where fluids could more readily penetrate between the particles, relative to shell remnants that are more continuous and conformal. It is thus respectfully submitted that there is, in fact, a structural difference between the particulate compounds produced according to claim 1 and the structures resulting from the WO 98/16586 method. Because WO 98/16586 does not start with a shell and core structure, the resulting ground structures must also be different. In short, the claim 1 composition is a different physical structure from that taught in WO 98/16586.

Because WO 98/16586 does not teach or suggest ground shell and core structures nor the fact that when such shell and core structures are ground the shell remnants or pieces that remain adhered to the core fragments act as particularly effective anti-agglomeration agents as claimed, the reference does not teach each and every limitation of the amended claims. Further, because WO 98/16586 does not suggest or hint at the shell and core structures as claimed, the reference does not render obvious the claimed invention. Reconsideration is respectfully requested.

35 U.S.C. §102/§103 Rejection over Kommareddi, et al.

The Examiner has rejected claims 13-24 and 29-32 under 35 U.S.C. §102(e) as allegedly anticipated by, or in the alternative, under 35 U.S.C. §103(a) as allegedly obvious over U.S. Pat. No. 6,126,872 to Kommareddi, et al.

The Examiner notes that the rejection is maintained for the reasons of record and the following response.

With respect to claims 13-16, the monomer in a core is polymerized in the presence of a pre-polymerized catalyst, and thus the claimed invention is a polymeric core encapsulated with a shell. Thus, the Examiner alleges that the polymeric core of Kommareddi, et al. meets the instant invention and the Applicants allegedly failed to show otherwise.

With respect to claims 17-20, claim 22 of Kommareddi, et al. is seen by the Examiner to teach polyethylene oxide being the shell, and said polyethylene oxide encompasses any molecular weight and the Examiner contends the Applicants failed to show any criticality of the recited molecular weight.

With respect to claims 21-24, the Examiner alleges that the step of showing removal of water is not required in the claimed product.

With respect to claims 29-32, the Examiner asserts that the claimed invention is a product, not a process, and the instant claims do not recite any limitation with respect to the polymeric core. The Examiner contends that the Applicants failed to show the claimed polymeric core is different from that of Kommareddi, et al. As a matter of fact, Kommareddi, et al. is seen to teach the use of the instant main ( $\text{TiCl}_3$ ) and co-catalyst (diethylaluminum chloride and diethylaluminum ethoxide) in example 1 contrary to Applicants' assertion.

The Applicants must again respectfully traverse. The Applicants would respectfully direct the Examiner's attention to the fact that claims 13-16 and 21-24 are cancelled herein without prejudice to the Applicants' right to present such claims at a later date in a continuing application.

Again, a patent claim is anticipated, and therefore invalid, only when a single prior art reference discloses each and every limitation of the claim. *Glaxo Inc. v. Novopharm Ltd.*, *id.*

With respect to claims 17-20, the Examiner's attention is respectfully directed to the amendment to independent claim 17 herein where the molecular weight of the polyethylene oxide has been amended to recite about 100,000 weight average molecular weight, which is at the lower end of the range originally present in the claim. Support for this recitation is found on page 16 of the application as originally filed, lines 25-27. It is respectfully submitted that while the Kommareddi, et al. reference mentions the possibility that the shell material "might form a skin upon exposure to air or other gas", where the "skin would not be soluble in the core", the reference does not teach or suggest how such a skin is to be accomplished. Kommareddi, et al. does not show or suppose that a skin may be formed by *polyethylene oxide*, much less *polyethylene oxide having a molecular weight of about 100,000*.

Kommareddi, et al. does not teach or suggest the structure of polyethylene oxide having a skin over the outer surface of the shell, or that the molecular weight of the shell should be about 100,000. Because the single Kommareddi, et al. reference does not teach

each and every limitation of the claim, the instant claims are novel over the reference. Furthermore, it is respectfully submitted that Kommareddi, et al. does not suggest or hint anything about approximately 100,000 molecular weight polyethylene oxide bearing or having a skin over the outer surface of the shell. Thus, it is respectfully submitted that the claims are not obvious from the reference.

With respect to claims 29-32, the Examiner's attention is respectfully directed to the amendment to independent claim 29 that the core comprises the absence of a carrier. Support for this recitation is found in the application as filed in paragraph [0040] from page 11, line 25 to page 12, line 13, particularly the sentence bridging the two pages: "The basis for this idea is to use the monomer itself as a carrier and eliminate the mineral oil or kerosene." It is thus respectfully submitted that the amendment to claim 29 is supported in the application as filed and does not constitute an improper insertion of new matter.

The Examiner's attention is further requested to contrast Example 6 with Examples 4 and 5 of the application as filed. Please note particularly page 29, lines 12-13:

This example highlights the elimination of the use of kerosene or mineral oil to act as a carrier for the catalyst and thereby increase the monomer loading in the core. The core contained 99.3 wt% 1-Decene, which is the highest in examples 4-6.

These claims (by way of independent claim 29) recite that the polymerization of the monomers in the core are not catalyzed by the main catalyst until a co-catalyst is added thereto, and that there is *an absence of a carrier* in the core. Kommareddi, et al. does not teach or suggest the absence of a carrier together with using a co-catalyst. Kommareddi, et al.'s relevant Examples 1, and 4-6 all use a kerosene carrier (please see column 8, lines 26-28 and Table I in column 10, last row). The structures or compositions encompassed by these claims are physically and structurally different from those taught or suggested by Kommareddi, et al. because the subject claims explicitly recite the absence of a carrier. Because the single Kommareddi, et al. reference does not teach each and every limitation of claim 29, the instant claims are novel over the reference. Furthermore, it is respectfully submitted that Kommareddi, et al. does not suggest or hint about anything concerning the

absence of a carrier in the core. Thus, it is respectfully submitted that these claims are further not obvious from the reference.

Thus, because the single Kommareddi, et al. does not teach every limitation of the rejected claims, the rejected claims are novel thereover, contrary to the Examiner's supposition. Further, since Kommareddi, et al. does not suggest or propose or hint at the various elements discussed for the two groups of claims, it is respectfully submitted that the Examiner has not made a *prima facie* obviousness rejection of those claims over Kommareddi, et al. Reconsideration is respectfully requested.

35 U.S.C. §102/§103 Rejection over Martin, et al.

The Examiner has rejected claims 13, 15, 21, 22, 24, 29 and 31 under 35 U.S.C. §102(e) as allegedly anticipated by, or in the alternative, under 35 U.S.C. §103(a) as allegedly obvious over U.S. patent application 2003/0113445 to Martin, et al.

The Examiner notes that the rejection is maintained for the reason of record and the following response.

The Examiner contends that the core-shell polymer of Martin, et al. inherently meets the instant product absent a particular polymer (or monomer) and polymerization methods. The limitation such as a high molecular weight found in the specification cannot be read into the claim (as limitation). Again, an invention in a product-by-process is a product, not a process; and the Examiner again cited *In re Brown* and *In re Thorpe*.

Again, the Applicants must respectfully traverse. The Examiner's attention is again respectfully directed to the fact that claims 13, 15, 21 and 22 have been cancelled herein without prejudice to the Applicants' right to submit such claims in a continuing application at a later date.

Furthermore, a patent claim is anticipated, and therefore invalid, only when a single prior art reference discloses each and every limitation of the claim. *Glaxo Inc. v. Novopharm Ltd.*, *id.* Additionally, to support an obviousness rejection, the Examiner has the initial burden of establishing a *prima facie* case of obviousness of the pending claims over the cited prior art, *In re Oeticker*, *id.*

The Examiner's attention is respectfully directed to the amendment to independent claim 17 noted previously that the shell contains polyethylene oxide of a molecular weight of about 100,000 weight average. It is respectfully submitted that Martin, et al. does not teach or suggest this physical structure. Martin, et al. does not teach or suggest anything about polyethylene oxide, much less polyethylene oxide having a weight average molecular weight of about 100,000. Martin, et al. does not mention or propose any teaching about shells with skins. Thus, the single prior art reference does not disclose each and every limitation of the claim, nor does Martin, et al. suggest or propose any of these claimed elements.

For all of these reasons, it is respectfully submitted that the instant rejection must fail. The single reference does not suggest or hint at each and every limitation of the claim, as noted. Furthermore, Martin, et al. does not teach or suggest employing those necessary elements recited in the remaining rejected claims – there is no motivation noted by the Examiner for modifying Martin, et al. to result in the recited structures of the claims. The Examiner has not noted any such motivation. Reconsideration is respectfully requested.

35 U.S.C. §102/§103 Rejection over O'Mara, et al.

The Examiner has rejected claims 1-6 under 35 U.S.C. §102(b) as allegedly anticipated by, or in the alternative, under 35 U.S.C. §103(a) as allegedly obvious over U.S. Pat. No. 4,826,728 to O'Mara, et al.

The Examiner again notes that the rejection is maintained for the reason of record and the following response.

The Examiner asserts that the TCP inherently acts as an anti-agglomeration agent and would have an adhesive force. Again, the Examiner notes that an invention in a product-by-process is a product, not a process, citing *In re Brown* and *In re Thorpe*.

The Examiner further contends that claim 1 recites that the shell acts as an anti-agglomeration agent (without particular [*sic*, particulate] materials) and claim 5 recites that a coating of an anti-agglomeration agent is applied during and/or after the encapsulated compound is ground (without particular materials). Thus, the Examiner alleges that the shell and said coating can be the same material in the claimed final product.



Yet again, the Applicants must respectfully traverse. A patent claim is anticipated, and therefore invalid, only when a single prior art reference discloses each and every limitation of the claim. *Glaxo Inc. v. Novopharm Ltd.*, *id.* To support an obviousness rejection, the Examiner has the initial burden of establishing a *prima facie* case of obviousness of the pending claims over the cited prior art, *In re Oeticker*, *id.*

The Applicants would again note that claim 5 is cancelled herein.

Additionally, the Applicants respectfully submit that the subject claims are novel and non-obvious over O'Mara, et al. for the same reason that they are novel and non-obvious over WO 98/16586, previously addressed. The Examiner is reminded that the claimed shell is now recited to act as an anti-agglomeration agent upon grinding of the core and shell structure. The shell is of particular effectiveness because the ground shell remnants adhere and conform more closely to and more completely to the core fragments providing a more complete and less porous physical barrier to agglomeration. Further as explained *supra*, with respect to the schematic sketch provided, relatively larger shell remnants are expected to remain adhered to the polymer core fragment to provide more effective protection thereto, whereas in O'Mara, et al. a finely divided, solid coating agent is simply mingled with the comminuted polymer. Indeed, FIG. 1 of O'Mara, et al. much more closely resembles the right-side illustration than it does the cross-section of the inventive particulate compounds on the left.

Even though the O'Mara, et al. FIG. 1 shows many layers of their finely divided, solid coating agent, it is still more porous due to the interstitial voids and spaces between the partitioning agent, as compared with the structure on the left of the sketch *supra* where a shell remnant more conformally and completely covers and seals off the non-sheared, non-broken portions of the polymer core fragment. Even if multiple layers of shell fragments were shown on the left side sketch illustration and multiple layers of the partitioning agent were shown on the right side sketch illustration (as in O'Mara, et al.'s FIG. 1), the fact would remain that the resulting physical structure of the particulate compounds of claim 1 would be different from that of O'Mara, et al.

The recited core and shell structure required by claim 1 is not taught by nor suggested by O'Mara, et al. The O'Mara, et al. protective shell is formed by the finely

divided, solid coating agent through mixing, *not encapsulation as recited*, thus this limitation of the claims is not taught by the O'Mara, et al. reference.

Further, O'Mara, et al. does not teach or suggest a core comprising a compound that includes a polymer formed within the shell or a core comprising monomers which are polymerized within the shell. O'Mara, et al.'s "core" is pre-formed polymer that has been comminuted. It has not been bulk polymerized within the shell to very high molecular weights as required by the claims. Nor does O'Mara, et al. suggest or propose any of these required features.

Thus, it is respectfully submitted that the amended claims are not obvious from O'Mara, et al. since a *prima facie* case for obviousness has not been made, and they are further novel over O'Mara, et al. because this single reference does not teach each and every limitation of the amended claims. Reconsideration is respectfully requested.

#### Request for Entry of Amendment

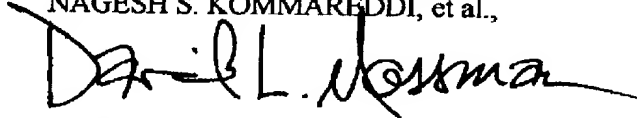
The Applicants would respectfully submit that the instant Amendment be entered under 37 CFR 1.116(b): "Amendments presenting rejected claims in better form for consideration on appeal may be admitted." It is respectfully noted that nine (9) more claims have been canceled herein, which greatly simplifies the issues remaining in the case. Further, claim 17 has been amended to more clearly and narrowly define the effective molecular weight range of the polyethylene oxide shell. Finally, claim 29 has been amended to recite the absence of a carrier, further narrowing and simplifying the issues in the case. It is respectfully submitted that for all of these reasons alone, which simplify and narrow the issues, and the place the rejected claims in better form (and reduced number) for consideration on appeal, the instant Amendment should be entered.

Further, the Applicants would respectfully submit that the instant amendment be entered under 37 CFR 1.116(c): "If amendments touching the merits of the application or patent under reexamination are presented after final rejection, or after appeal has been taken, or when such amendment might not otherwise be proper, they may be admitted upon showing of good and sufficient reasons why they are necessary and were not earlier presented." The Applicants submit that the reason why the amendments and arguments above are necessary and were not earlier presented is because the Applicants had a *bona*

*fide* belief that the amendments and arguments presented in the Amendment filed February 17, 2004 would permit all of the rejected claims to be allowed. With respect to the rejections based on WO 98/16586 and O'Mara, et al., upon reviewing the final Action, the Applicants were convinced that the Examiner did not fully appreciate the physical, structural differences between the inventive particulate compound and the teachings of the references, such as are more clearly illustrated in the enclosed sketch. Furthermore, with respect to the rejections based on Kommareddi, et al. and Martin, et al., the Applicants more fully understood the Examiner's position after the final Action and realized the necessity or desirability of further amendment. For the Applicants to have hope of being assured of a chance to fully address the instant rejections, the amendments and arguments herein must be entered and considered.

It is respectfully submitted that the amendments and arguments presented above overcome all objections and rejections of the claims. Reconsideration and allowance of the claims are respectfully requested. The Examiner is respectfully reminded of the duty to indicate allowable subject matter. The Examiner is invited to call the Applicants' attorney at the number below for any reason, especially any reason that may help advance the prosecution.

Respectfully submitted,  
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